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**Quantitative Analysis of Forest Cover Dynamics: A Comparative Study of Nordic and South Asian Countries**

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**Abstract**

This comprehensive study delves into a thorough comparative analysis of the changes in forest cover across Nordic and South Asian countries spanning a 26-year period from 1990 to 2019. This analytical approach enables the discernment of significant patterns and extraction of meaningful insights crucial for understanding the complex interplay of environmental, socio-economic, and policy factors in shaping forest dynamics in Sri Lanka and other South Asian countries. The research relies on meticulously gathered secondary data from reputable sources such as the World Bank and FAO. The data is then systematically organized and subjected to comprehensive analysis using various graphical representations, facilitating the identification of significant patterns and the extraction of meaningful insights. During the study period, the Nordic region exhibited a remarkable trend, with all countries experiencing substantial increases in forest land cover. Iceland, in particular, stood out with an astonishing 168% change in forest coverage from 1990 to 2019. Denmark and Finland maintained relatively stable forest coverage percentages of 13% and 2%, respectively, over the same period. In contrast, South Asian countries like Bangladesh and Sri Lanka showed negative trends in forest coverage, with respective decreases of 2% and 8% from 1990 to 2019. Conversely, Bhutan and India displayed substantial growth in forest cover, marking impressive increases of 8% and 10%, respectively, over the same timeframe. Interestingly, all Nordic countries consistently demonstrated a net annual gain in forest cover, except during a brief interlude from 2000 to 2004. In contrast, all South Asian countries, except India and Bhutan, experienced net annual forest losses throughout the study period. Notable variations in net annual gains were observed, such as Denmark and Finland recording net annual losses of forest cover during the period from 2000 to 2004. Furthermore, Bhutan and India consistently exhibited net annual gains in forest cover throughout the entire study period. India, in particular, demonstrated the highest net annual gain of forest cover from 2000 to 2004 with a value of 3,710.41 km<sup>2</sup>/year, maintaining substantial gains from 2015 to 2019 at 2,131.20 km<sup>2</sup>/year. Bhutan exhibited a net annual gain in forest cover, with an average annual gain of 79 km<sup>2</sup>/year from 1990 to 2014, and a reduced net annual gain of 16 km<sup>2</sup>/year from 2015 to 2019. Conversely, Pakistan, Bangladesh, and Sri Lanka consistently witnessed net annual losses of forest cover, though with varying rates of decline. Sri Lanka displayed fluctuations in net forest cover, with rates ranging from 24 km<sup>2</sup>/year to 118.40 km<sup>2</sup>/year during the periods from 2005 to 2009 and from 2000 to 2004, respectively. Nepal recorded the highest average value of net annual loss of forest cover amounting to 422.40 km<sup>2</sup>/year during the period from 2000 to 2004. This research serves as a valuable resource for shaping effective environmental policies and fostering collaboration for sustainable development.

**Keywords:** Forest cover, Nordic, South Asia, Loss/Gain of forest